



building envelope [wall construction]



In order to conserve energy, the Parkland Net-Zero is constructed using double-stud 2x4 walls that are 16" thick (Deep Wall). In the engineering phase we specified that we wanted "double the standard" for thermal resistance of the building envelope.

Technical Specification

The middle figure on the left shows a detailed cross-section of the Deep Wall construction. Blown cellulose fiber insulation was chosen because of its high thermal resistance and low environmental impact (total R-56 or RSI 9.9). Borate additives impregnate the organic fibers to resist mould, wood decay, insects, corrosion and combustion.

Energy Savings

This wall design has very high insulation value and eliminates most of the thermal bridging that occurs in standard home construction. Annual heat loss of the Parkland Net-Zero walls was reduced by 70% compared to that of a typical 2x6 wall .

Occupant Comfort

Reduced interior noise transmission and higher mean radiant temperature combine to improve occupant comfort. We also like that each window sill is deep enough to be used as a window bench.

Resource Conservation

Surprisingly, the amount of lumber used in the deep wall design is similar to that of a typical 2x6 wall with studs spaced on 16" centers. There is a small increase in OSB sheathing material for the top and bottom plates and lining the window and door openings. Keeping the material use at a minimum is achieved by simplified backing details and Optimum Value Engineering (OVE) measures such as installing door and window headers in the floor system.

Cost Implications

The additional costs for the deep walls include; increased framing labour costs of about 40% over a standard wall, or 10% of the framing budget; bigger footprint for the same floor space (added exterior finishing materials); cost to line the window wells and door sills.

